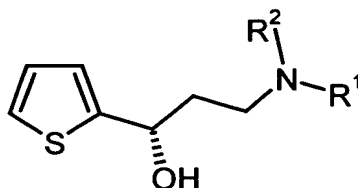


## Patent Claims:

1. Process for the preparation of enantiomer-enriched compounds of the general formula (I)

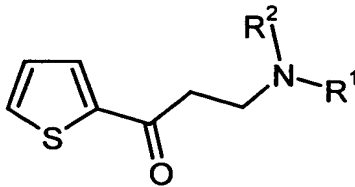


(I)

wherein

R<sup>1</sup> and R<sup>2</sup> independently of one another denote H, (C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>1</sub>-C<sub>8</sub>)-acyl, (C<sub>1</sub>-C<sub>8</sub>)-alkoxycarbonyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl, (C<sub>6</sub>-C<sub>18</sub>)-aryl, (C<sub>7</sub>-C<sub>19</sub>)-aralkyl, (C<sub>3</sub>-C<sub>18</sub>)-heteroaryl, (C<sub>4</sub>-C<sub>19</sub>)-heteroaralkyl, ((C<sub>1</sub>-C<sub>8</sub>)-alkyl)<sub>1-3</sub>-(C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl, ((C<sub>1</sub>-C<sub>8</sub>)-alkyl)<sub>1-3</sub>-(C<sub>6</sub>-C<sub>18</sub>)-aryl, ((C<sub>1</sub>-C<sub>8</sub>)-alkyl)<sub>1-3</sub>-(C<sub>3</sub>-C<sub>18</sub>)-heteroaryl, or the radicals R<sup>1</sup> and R<sup>2</sup> together form a (C<sub>1</sub>-C<sub>8</sub>)-alkylene bridge, wherein these may be substituted with one or more (C<sub>1</sub>-C<sub>8</sub>)-alkyl, (C<sub>3</sub>-C<sub>8</sub>)-cycloalkyl, (C<sub>6</sub>-C<sub>18</sub>)-aryl, (C<sub>7</sub>-C<sub>19</sub>)-aralkyl, (C<sub>3</sub>-C<sub>18</sub>)-heteroaryl, (C<sub>4</sub>-C<sub>19</sub>)-heteroaralkyl radicals with the formation of further chirality centres,

by enantioselective hydrogenation of compounds of the general formula (II)



(II)

wherein R<sup>1</sup> and R<sup>2</sup> have the meanings given above,

with a catalyst comprising an enantiomer-enriched  
bidentate phosphorus-containing ligand, a transition  
metal and a diamine.

5

2. Process according to claim 1, characterised in that  
chiral phosphorus-containing ligands are used selected  
from the group comprising Deguphos, Binap, Phanephos,  
Norphos, DIOP, Duphos, Prophos, BDPP, BPPM, Malphos,  
Rophos or Basphos.

10

3. Process according to claim 1, characterised in that as  
diamine a chiral compound is used selected from the  
group DIAPEN, DPEN, DMDPEN, 1,2-cyclohexyldiamine.

15

4. Process according to claim 1, characterised in that as  
transition metal a metal is used selected from the  
group comprising Ru, Rh, Ir, Pd.

20

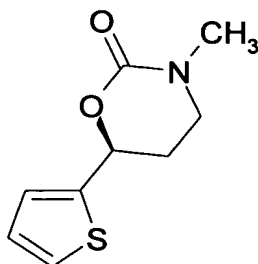
5. Process according to one or more of the preceding  
claims, characterised in that hydrogenation is carried  
out in the presence of molecular hydrogen or by means  
of transfer hydrogenation.

6. Process according to one or more of the preceding  
claims, characterised in that the hydrogenation is  
carried out in the presence of a base.

25

7. Process according to claim 6, characterised in that  
the base is used in a molar amount of >10 : 1 referred  
to the catalyst.

8. Process according to one or more of the preceding claims, characterised in that the hydrogenation is carried out in solvents selected from the group comprising methanol, ethanol, isopropanol, tert.-butanol in their aqueous or non-aqueous form.
9. Process according to one or more of the preceding claims, characterised in that the catalyst comprising the diamine, transition metal and the phosphorus-containing ligand is used in a concentration of 0.1-0.5 mole %.
10. Process according to one or more of the preceding claims, characterised in that the temperature during the hydrogenation is between 0° and 100°C, more preferably between 10° and 80°C and particularly preferably between 20° and 60°C.
11. Process according to one or more of the preceding claims, characterised in that in the case of hydrogenation with molecular hydrogen, a hydrogen pressure of 1-200, preferably 2-100 and particularly preferably between 5 and 80 bar is adjusted.
12. Cyclic carbamate of the formula III.



(III)